

COMPLETE LISTING OF THE CLAIMS

Claim 1 (currently amended): A level adjustment method applicable to an audio processing apparatus having a plurality of amplifiers corresponding to three or more of input channels of an audio signal for amplifying signal levels of the respective input channels, the level adjustment method comprising:

a group type select process of selecting a desired type of grouping from different types of grouping of the input channels;

a group arrangement process of arranging the plurality of the input channels into one or more group according to the selected type of grouping; and

a detection process of detecting, for each group, a maximal one of the signal levels of the input channels belonging to the same group; and

an adjustment process of adjusting, for each group, an amplification rate of all the amplifiers involved in the same group according to the detected maximal signal level such as to decrease the amplification rate as the maximal signal level increases

~~a group control process of controlling each group such as to decrease an amplification rate of all the amplifiers corresponding to the input channels belonging to the same group as a maximal one of the signal levels of the input channels belonging to the same group increases.~~

Claim 2 (canceled)

Claim 3 (currently amended): The level adjustment method according to claim 1 ~~claim 2~~,
wherein the group arrangement process is applied to an audio signal of a surround system
having at least six input channels including a left channel, a right channel, a left surround channel, a
right surround channel, a center channel, and an LFE channel, and

wherein the group arrangement process arranges all of the left channel, the right channel, the
left surround channel, the right surround channel, the center channel and the LFE channel into one
group, according to the selected type of grouping.

Claim 4 (currently amended): The level adjustment method according to claim 1 ~~claim 2~~,
wherein the group arrangement process is applied to an audio signal of a surround system
having at least six input channels including a left channel, a right channel, a left surround channel, a
right surround channel, a center channel, and an LFE channel, and

wherein the group arrangement process arranges the input channels into a first group
including the left channel, the right channel, the left surround channel, the right surround channel
and the center channel, and a second group including the LFE channel, according to the selected
type of grouping.

Claim 5 (currently amended): The level adjustment method according to claim 1 ~~claim 2~~,
wherein the group arrangement process is applied to an audio signal of a surround system
having at least six input channels including a left channel, a right channel, a left surround channel, a
right surround channel, a center channel, and an LFE channel, and

wherein the group arrangement process arranges the input channels into a first group including the left channel, the right channel and the center channel, a second group including the left surround channel and the right surround channel, and a third group including the LFE channel, according to the selected type of grouping.

Claim 6 (currently amended): The level adjustment method according to claim 1 ~~claim 2~~,
wherein the group arrangement process is applied to an audio signal of a surround system
having at least six input channels including a left channel, a right channel, a left surround channel, a
right surround channel, a center channel, and an LFE channel, and

wherein the group arrangement process arranges the input channels into a first group including the left channel and the right channel, a second group including the left surround channel and the right surround channel, a third group including the LFE channel, and a fourth group including the center channel, according to the selected type of grouping.

Claim 7 (currently amended): The level adjustment method according to claim 1, further comprising a band separation process of separating the respective input channels into a plurality of frequency bands, so that the group arrangement process, the detection process and the ~~group control~~ adjustment process are applied to a respective one of the frequency bands.

Claim 8 (canceled)

Claim 9 (currently amended): The level adjustment method according to claim 1 ~~claim 8~~, wherein the detection process further comprises a sample and hold process of successively sampling absolute values of the signal level of each input channel for a predetermined period and holding a greatest one of the sampled absolute values, so that the sampled and held greatest absolute value represents the signal level of the input channel.

Claim 10 (original): The level adjustment method according to claim 9, wherein the detection process detects a maximal one of the respective greatest absolute values sampled and held for the respective input channels of the same group, thereby determining the maximal signal level.

Claim 11 (currently amended): ~~The level adjustment method according to claim 8,~~

A level adjustment method applicable to an audio processing apparatus having a plurality of amplifiers corresponding to three or more of input channels of an audio signal for amplifying signal levels of the respective input channels, the level adjustment method comprising:

a group arrangement process of arranging the plurality of the input channels into one or more group according to the selected type of grouping; and

a detection process of detecting, for each group, a maximal one of the signal levels of the input channels belonging to the same group; and

an adjustment process of adjusting, for each group, an amplification rate of all the amplifiers involved in the same group according to the detected maximal signal level such as to decrease the amplification rate as the maximal signal level increases,

wherein the adjustment process checks whether the maximal signal level of each of the groups exceeds a predetermined threshold level, and, when the maximal signal level of the group exceeds the threshold level, decreases the amplification rate of the group according to the excess amount.

Claim 12 (original): The level adjustment method according to claim 11, wherein the adjustment process operates when the maximal signal level does not exceed the threshold level for maintaining a predetermined amplification rate, and operates when the maximal signal level exceeds the threshold level for decreasing the predetermined amplification rate by a predetermined factor.

Claim 13 (original): The level adjustment method according to claim 12, wherein the adjustment process smoothens a transition of the amplification rate around the threshold level according to a predetermined knee parameter.

Claim 14 (currently amended): The level adjustment method according to claim 11 ~~claim 8~~, ~~wherein the group control process includes~~ further comprising a response control process of controlling a response of the adjusting of the amplification rate relative to the detecting of the maximal signal level according to predetermined attack and release parameters.

Claim 15 (currently amended): An audio processing apparatus comprising:

a plurality of amplifiers corresponding to three or more of input channels of an audio signal for amplifying signal levels of the respective input channels;

a group type select section that selects a desired type of grouping from different types of grouping of the input channels;

a group arrangement section for arranging the plurality of the input channels into one or more group; and

a detection section that detects, for each group, a maximal one of the signal levels of the input channels belonging to the same group; and

an adjustment section that adjusts, for each group, an amplification rate of all the amplifiers involved in the same group according to the detected maximal signal level such as to decrease the amplification rate as the maximal signal level increases

~~a group control section for controlling each group such as to decrease an amplification rate of all the amplifiers corresponding to the input channels belonging to the same group as a maximal one of the signal levels of the input channels belonging to the same group increases.~~

Claim 16 (canceled)

Claim 17 (original): A graphic user interface installed in an audio processing apparatus having a plurality of amplifiers corresponding to three or more of input channels of an audio signal for amplifying signal levels of the respective input channels, the graphic user interface being designed for assisting the audio processing apparatus in performing a level adjustment method comprising a group arrangement process of arranging the plurality of the input channels into one or more group, and a group control process of controlling each group such as to decrease an amplification rate of all the amplifiers corresponding to the input channels belonging to the same group as a maximal one of the signal levels of the input channels belonging to the same group increases, wherein the graphic user interface provides:

a visual symbol prompting the user to select desired grouping of the input channels at the group arrangement process; and

another visual symbol prompting the user to input parameters effective to determine how the amplification rate is decreased according to the maximal signal level during the group control process.

Claim 18 (original): The graphic user interface according to claim 17, wherein the parameters include a threshold parameter and a knee parameter, such that the group control process decreases the amplification rate when the maximal signal level exceeds a threshold level determined by the threshold parameter, and smoothens a transition of the amplification rate around the threshold level according to the knee parameter.

Claim 19 (new): An audio processing apparatus comprising:

a plurality of amplifiers corresponding to three or more of input channels of an audio signal for amplifying signal levels of the respective input channels;

a group arrangement section that arranges the plurality of the input channels into two or more groups;

a detection section that detects, for each group, a maximal one of the signal levels of the input channels belonging to the same group; and

an adjustment section that adjusts, for each group, an amplification rate of all the amplifiers involved in the same group according to the detected maximal signal level such as to decrease the amplification rate as the maximal signal level increases,

wherein the adjustment section checks whether the maximal signal level of each of the groups exceeds a predetermined threshold level, and, when the maximal signal level of the group exceeds the threshold level, decreases the amplification rate of the group according to the excess amount.

Claim 20 (new): The level adjustment method according to claim 11,

wherein the group arrangement process is applied to an audio signal of a surround system having a least six input channels including a left channel, a right channel, a left surround channel, a right surround channel, a center channel and the LFE channel, and the group arrangement process arranges the input channels into a first group including the left channel, the right channel, the left surround channel, the right surround channel and the center channel, and a second group including the LFE channel.

Claim 21 (new): The level adjustment method according to claim 11,

wherein the group arrangement process is applied to an audio signal of a surround system having at least six input channels including a left channel, a right channel, a left surround channel, a right surround channel, a center channel and an LFE channel, and the group arrangement process arranges the input channel into a first group including the left channel, the right channel and the center channel, a second group including the left surround channel and the right surround channel, and a third group including the LFE channel.

Claim 22 (new): The level adjustment method according to claim 11,

wherein the group arrangement process is applied to an audio signal of a surround system having at least six input channels including a left channel, a right channel, a left surround channel, a right surround channel, a center channel and an LFE channel, and the group arrangement process arranges the input channels into a first group including the left channel and the right channel, a second group including the left surround channel and the right surround channel, a third group including the LFE channel, and a fourth group including the center channel.